

Appln No. 09/996,233

Amdt date February 3, 2005

Reply to Office action of November 3, 2004

REMARKS/ARGUMENTS

Claims 1-21 will be pending in this application upon entry of the above amendments. Claims 1, 18, 19, and 20 have been amended. Claim 21 has been added. The amendments find full support in the original specification, claims, and drawings. No new matter has been added. In view of the above amendments and remarks that follow, reconsideration, reexamination, and an early indication of allowance of claims 1-21 are respectfully requested.

The Examiner objects to the drawings for failing to disclose the "receiver circuit," "selector circuit," and "combiner circuit" originally recited in claim 1. The Examiner further rejects claim 1 under 35 U.S.C. 112, first paragraph, because these circuits are also not described in the specification. Claim 1, as amended, no longer recites the receiver, selector, and combiner circuits. Accordingly, Applicant respectfully requests withdrawal of the objection to the drawings, and the rejection of claim 1 under 35 U.S.C. 112, first paragraph.

Claims 1-9, 12-14, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonsalves et al. (U.S. Patent No. 4,309,602) in view of Holtzman et al. (U.S. Patent No. 6,404,760). Claims 10-11 and 15 are rejected in view of Gonsalves in view of Holtzman, and further in view of either O'Callaghan et al. (U.S. Patent No. 5,552,916), Janusas (U.S. Patent No. 5,640,419), or Bruckler et al. (U.S. Patent No. 4,490,039). Applicant respectfully traverses these rejections.

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With respect to claims 1 and 12, the Examiner contends that Gonsalves teaches all of the limitations of claims 1 and 12 except that "Gonsalves does not disclose a signal processor for real-time processing the detector outputs to optimize the performance of the receiver by separating a plurality of performance enhancing detected signals from a plurality of performance degrading detected signals or a decoder for detecting the received optical signal in the processed signal and outputting a decoded optically transmitted symbol to a user." (Office action, p. 5, second paragraph). However, the Examiner relies on Holtzman to make up for this deficiency.

Applicant submits that the combination of Gonsalves and Holtzman is not proper because a person of skill in the art would have had no motivation to make such a combination. First, Gonsalves and Holtzman address different problems in different contexts and call for different solutions. Gonsalves addresses the problem of wavefront error sensing and correction in an adaptive image system. Gonsalves proposes using an adaptive optics to focus the image of an object upon a detector array in an image plane, and based on it, provide an image signal set to an image signal processor. The image signal processor processes the image signal to provide an estimated wavefront phase error signal representative of the estimated deviation of the wavefront incident upon the image plane which includes the detector array, from an undistorted wavefront. The estimated wavefront phase error signal is delivered to a control system controlling the adaptive optics so that the error of the

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wavefront incident upon the detector array is reduced. (See, Col. 3, lines 18-32).

Holtzman, on the other hand, addresses the problem of multiple access interference in a cellular subscriber communications system that uses multiple access techniques such as, for example, CDMA, for communicating between users of user stations (e.g. mobiles telephones) and cell-sites or base stations. (See, Col. 4, lines 13-20). Holtzman proposes reducing the interference via successive interference cancellation techniques based on RF signal strength estimation. The RF signal strength estimation is conducted via a baseband processor. (Col. 6, lines 31-40).

Based on the above, Applicant submits that Holtzman and Gonsalves are in different fields of arts, and a person of skill in the art facing the problem addressed in Gonsalves would not turn to Holtzman for applying its teachings to solve the problem. Thus, contrary to the Examiner's position, a person of skill in the art would not be motivated to use Holtzman's baseband processor in Gonsalves' wavefront sensing system.

Second, a person of skill in the art would not be motivated to use Holtzman's baseband processor because Gonsalves already provides a signal processor of its own. (See, FIG. 1, ref. 15). There is no indication that the use of Holtzman's baseband processor in lieu or in addition to Gonsalves' signal processor would help Gonsalves' effort for optic correction. Applicant submits that such correction is not dependent on the identification of strong signals as is done by Holtzman's

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baseband processor, but rather, in the correct estimation of the wavefront error, to which Holtzman's processor is not directed.

In fact, not only are Gonsalves and Holtzman in different fields of art from each other, making their combination improper, but each is also in a field of art that is unrelated to the field of art of Applicant's invention as claimed in claims 1 and 12. Claim 1, as amended, recites an "optical communications receiver for receiving and processing turbulence degraded optical signals comprising . . . a signal processor for real-time processing the detector outputs to optimize the performance of the optical communications receiver." (Emphasis added). Claim 12, as amended, similarly recites a "method for optimizing an optical communications receiver comprising . . . analyzing the detector outputs to determine which detected signals have sufficient signal intensity to improve the performance of the optical communications receiver." (Emphasis added).

Neither Gonsalves nor Holtzman disclose an "optical communications receiver," and are not concerned with optimizing the performance of such "optical communications receiver." The image processing conducted in Gonsalves' system is a very different application from optical communications, in that the goal of image processing is to produce a "good" picture, whereas the goal of optical communications is to convey serial data with minimum errors. The technology suitable for image processing generally does not also lead to good communication performance. Accordingly, claims 1 and 12 are now in condition for allowance.

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Claims 2-11 and 13-17 are also in condition for allowance because they depend on an allowable base claim, and for the additional limitations that they contain.

Claims 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bruckler et al. (U.S. Patent No. 4,490,039). Applicant respectfully traverses this rejection.

Claims 18, 19, and 20 have each been amended to recite a "method for optimizing an optical communications receiver." Bruckler is directed to a wavefront sensor and not to an optical communications receiver.

Furthermore, the wave front sensor disclosed by Bruckler utilizes a mask with a threshold which causes pixels having an output of less than the threshold to be ignored. (See, Col. 2, lines 37-45). Thus, Bruckler fails to teach or suggest an "optimally weighted signal processing multiplying each detector output with a weighting factor for optimizing optical communications performance" as is recited in claim 18. (Emphasis added).

Claims 19 and 20 respectively recite "an adaptive synthesized single-detector signal processing" and a "signal-to-noise processing," both of which are "configured to optimize optical communications performance." Nothing in Bruckler teaches or suggests a mechanism for "optimizing optical communications performance." Accordingly, claims 18-20 are now in condition for allowance.

Claims 21 is new in this application. Claim 21 adds limitations of a "wide-band communications detector" and a signal processor "configured to optimize a bit error rate of the

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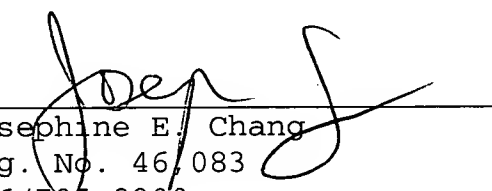
optical communications receiver," which further distinguish the optical communications receiver of claim 1 from any of the cited references. Accordingly, claims 21 is also in condition for allowance.

In view of the above amendments and remarks, Applicant respectfully requests reconsideration, reexamination, and an early indication of allowance of claims 1-21.

Respectfully submitted,

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